CHAPTER FIVE
500 GENERAL ENGINEERING

510 INTRODUCTION

The refuse disposal area, previously created by the Sunnyside Coal Company (SCC), has been acquired by Sunnyside Cogeneration Associates (SCA) to serve as a long-term supply of waste fuel for its coal mine waste-to-energy facility, located adjacent to the SCA Permit Area. SCA's alternative energy project has been approved by the Federal Energy Regulatory Commission as a Qualifying Facility, based on the usage of coal mine waste as fuel in its fluidized-bed combustion boiler. SCA will use "active waste" from-off-site processing plants/refuse piles, "accumulated waste" from refuse piles, and other alternate fuels as sources of waste fuel for the facility. SCA's fueling plan will require excavation of coal mine waste from the existing refuse pile, which began as early as January 1993.

Based on SCA's contract for the sale of electricity to Utah Power and Light, handling coal mine waste to serve as an alternative energy fuel will be a consistent and continuous process. Coal mine waste that continues to be generated by off-site preparation plants will also be factored into SCA's fueling strategy, which can allow direct acceptance of coal mine waste at the facility, or temporary placement within the refuse disposal area prior to utilization.

SCA will excavate coal mine waste from the refuse disposal area based on sampling and analyses and a materials handling plan which will be periodically updated by SCA. Excavation of the coal mine waste will be considerate of material quality, pile and embankment stability, and mine operation. Over the life of SCA's facility, nearly all of the coal mine waste will be burned to generate electricity. Final reclamation of the refuse pile will be accomplished after all of the coal mine waste is either burned as a fuel, or repositioned within the refuse disposal area for final disposal, if determined to be unacceptable fuel material (i.e., ashes, rock, soil, etc.).

Currently, there are activities that occur outside the Sunnyside Cogeneration Associates Permit Boundary that have significant bearing on the operations of the SCA Cogeneration facility and the SCA Permit Area. These activities occur in conjunction with the SCA permit site.

In order for SCA to acquire the quality and quantity of fuel for the cogeneration facility, coarse or fine refuse materials may be accepted from off-site facilities as needed. The refuse is stockpiled in designated areas within the SCA permit site then mixed with existing refuse on the SCA permit site and transported to the cogeneration facility. These operations; acceptance of refuse from off-site facilities and the transporting of coarse refuse to the cogeneration facility, require access roads that extend beyond the limits of the SCA permit boundary.

In addition to the access roads mentioned above, there are access roads to the south of the SCA permit boundary that are utilized for the purposes of the SCA operations. These roads are utilized to access areas of the SCA permit site that are inaccessible from the north side of the permit area. They are used by authorized contractors of SCA for the purposes of such activities as: water quality monitoring, periodic inspections and site maintenance as needed.

Activities that occur outside the SCA Permit Area also include watersheds outside the permit area that drain into contained areas within the permit area. Chapter Seven of the Permit outlines these watersheds and the areas to which they drain. Also included are detailed maps and calculations showing the amount of

water from each watershed and the capacity of the drainages and ponds that were constructed to contain them. In some instances, a drainage commencing within the SCA Permit Area may extend beyond the limits of the SCA permit boundary. An example of this is the outlet of the Pasture Sediment Pond. In such a case, SCA commits to maintaining this drainage and providing the necessary information to the Division to show its adequacy to handle the required storm event. In the event that this occurs elsewhere within the permit area, SCA will handle each instance on a case-by-case basis and notify the DOGM of any proposed changes to the Permit.

It should be noted that the SCA operations encompass a number of entities that do not necessarily lie or operate within the permitted area. These non-mining related activities that occur outside of the permitted area are done so in a controlled manner under permits from other agencies, and have been incorporated into the entire design and plan of the SCA Cogeneration facility. SCA understands the implications of utilizing entities outside of the permitted area and commits to maintaining the applicable areas in accordance with DOGM requirements.

This chapter includes operation plans, reclamation plans, design criteria, and performance standards that are applicable to the SCA Permit Area. Design calculations are referenced in the appropriate sections along with maps, plans, and cross-sections. It should be noted that SCA has relied on data, maps, plans, and cross-sections from previous approved permits for the SCC mines in order to verify locations of geologic structures, sediment ponds, borrow areas, road culverts, creeks, etc. that lie within the SCA Permit Area. In this chapter where the "permit area" is referred to, the SCA Sunnyside Permit Area is to be assumed unless the larger overall area for the SCC is specifically referred to in the text as the "original SCC permit area."

512 CERTIFICATION

512.100 Cross Sections and Maps

The maps and cross sections, associated with this permit, have been prepared and certified by, or under the direction of, a qualified, registered professional engineer or land surveyor, with assistance from experts in related fields such as hydrology, geology and landscape architecture. These maps and cross sections will be updated as required by the Division of Oil, Gas and Mining (DOGM).

A list of plates that are applicable to the SCA Permit Area as required under R645-301-512.100 through R645-301-512.260 are included in the General Table of Contents.

512.110 Mine Workings

No underground mine workings exist within the SCA Permit Area. Plate 5-7 delineates the extent of surface areas previously disturbed by mining activities. Plate 5-8 shows the existing surface and subsurface facilities and features which have been associated with mining activities.

512.120 Surface Facilities and Operations

Plate 5-1 shows the location and size of existing areas of spoil, waste, coal development waste, and non-

coal waste disposal, dams, embankments, other impoundments, and water treatment facilities within the SCA Permit Area. It also shows the facilities used for crushing and screening the coal refuse as well as the features associated with the adjacent cogeneration facility.

Plate 5-5 shows topsoil pile cross sections.

512.130 Surface Configurations

As required under sections 542.300 and 302-200, maps or cross sections detailing plans for soil stabilization, compacting and grading are referenced in the appropriate sections.

512.140 Hydrology

Maps required under R645-301-722 and R645-301-731.700 are included in Chapter Seven, Hydrology. Among these requirements are locations of subsurface water within or adjacent to the SCA Permit Area, intakes for current users, sedimentation ponds, coal processing waste banks, and embankments. Maps are provided only when the above mentioned locations fall within the SCA Permit Area or within an adjacent area that will potentially impact the SCA Permit Area.

512.150 Geologic Cross Sections and Maps

Chapter Six, section 622, includes information applicable to the SCA Permit Area such as: elevations and locations of test borings and core samples; nature, depth, and thickness of coal seams; and crop lines and strike and dip of the coal.

512.200 thru 512.260 Plans and Engineering Designs

Plate 5-1 outlines the locations of excess spoil, durable rock fills, coal mine waste, impoundments and other surface facilities within and adjacent to the SCA Permit Area. Plate 5-2 outlines the locations of primary roads. The design of the Excess Spoil Disposal Areas is found in Chapter Nine and Appendices 9-2, 9-5, and 9-7. Coal mine waste will also be placed in the Excess Spoil Disposal Areas.

513 COMPLIANCE WITH MSHA REGULATIONS AND MSHA APPROVALS

513.100 thru 513.800 Compliance with 30 CFR

Coal mine waste dams, embankments, impoundments, sedimentation ponds, refuse piles, the extinguishing of coal mine waste fires, and the nature and timing of reclamation activities will meet the performance standards set forth by the MSHA. The embankments and impoundments that are regulated by the MSHA are shown in Plate 5-4, Slope Stability Criteria Map. Where applicable, SCA will comply with all MSHA Regulations and obtain all required MSHA Approvals.

A geotechnical report prepared in February 1987 and updated in June 1992 by Rollins, Brown and Gunnell (Appendix 5-5) shows that the existing East and the former West Slurry Cell Embankments meet the requirements of 30 CFR 77.214 and 77.215. The cross-sections for this report are shown in Plate 5-6.

Coal mine waste fires will be extinguished by placing two-feet of borrow material over the burning area. Only those persons authorized by the Operator, and who are familiar with the appropriate procedures will extinguish any coal mine waste fires. The source of borrow material may be any of the borrow areas within the Permit Area where excess material exists beyond that needed for reclamation, or from spoil material removed during the mining process, or from an acceptable off-site source. When an area is mined, the fire control materials will be placed in the Excess Spoil Disposal Area.

514 INSPECTIONS

514.100 thru 514.140 Excess Spoil Disposal Areas

A professional engineer or specialist experienced in the construction of earth and rock fills will periodically inspect the fill throughout the construction period (at least four times a year) as required by the DOGM. These inspections will be performed during critical construction periods such as: foundation preparation, installation of final surface drainage systems, and the final graded and revegetated fill. A schedule for periodic inspections is provided in Table 5-1.

A certified report will be provided by the professional engineer promptly after each inspection. The report will include any appearances of instability, structural weakness, and other hazardous conditions as well as the results of samples taken to determine the acid/toxic potential. The report on the drainage system and protector filters will also contain color photographs taken in compliance with section 514.130 thru 514.133 that are representative of the site. Photographs will accompany each certified report and will include physical features of the site in order to specifically and clearly identify the site.

A copy of each inspection report will be retained at the SCA cogeneration power plant site and at the office of the Engineer. A copy of the inspection report will be promptly sent by SCA to the Division, as required.

514.200 thru 514.250 Refuse Piles

A professional engineer or specialist experienced in the construction of earth and waste structures will inspect the refuse pile on a regular basis (at least four times a year) as required by the DOGM. These inspections will be performed during critical construction periods such as: foundation preparation, placement of underdrains and protective filter systems, installation of final surface drainage systems, and the final graded and revegetated facility. A schedule of periodic inspections is provided in Table 5-1.

A certified report will be provided by the professional engineer promptly after each inspection. The report will include any evidence of instability, structural weakness, and other hazardous conditions. The report will also contain color photographs taken in compliance with section 514.240 that are representative of the site.

Photographs will accompany each certified report and will include physical features of the site in order to

specifically and clearly identify the site.

A copy of each inspection report will be retained at the SCA cogeneration power plant site and at the office of the Engineer. A copy of the inspection report will be promptly sent by SCA to the Division, as required.

514.300 thru 514.330 Impoundments

A professional engineer, or other qualified person designated by SCA, will inspect the impoundments within the SCA Permit Area. Impoundments, subject to MSHA, 30 CFR 77.216, will be inspected in accordance with the MSHA Approved Program found in Appendix 5-8. Quarterly inspections will be conducted on impoundments NOT subject to MSHA, 30 CFR 77.216. The various impoundments and their classification are outlined in Plate 5-4. A schedule for periodic inspections is provided in Table 5-1.

After each inspection, the qualified registered professional engineer will provide a certified report that the impoundment has been constructed and maintained as designed in accordance with the R645-302 Rules. The report will include information necessary to satisfy regulations set forth under section 514.312. Such information will include discussion of instability, structural weakness or other hazardous conditions, depth and elevation of any impoundment waters, existing storage capacity, any existing or required monitoring procedures and instrumentation, and any other aspects of the structure affecting stability. A copy of the report will be retained at the SCA cogeneration power plant site and at the offices of the Engineer. A copy of the inspection report will be promptly sent by SCA to the Division, as required.

Appendix 5-1 presents the slope stability analyses for the Railcut, Pasture and Borrow Area Sediment Ponds. Appendix 5-3 presents slope stability analyses for the Clear Water Pond and the former Slurry Ponds One and Two. Appendix 5-4 contains information on slope stability for the Coarse Refuse Toe and Old Coarse Refuse Road Sediment Ponds. The above mentioned impoundments have been determined to be stable under existing conditions.

515 REPORTING AND EMERGENCY PROCEDURES

515.100 Slides and Other Damage

At any time a slide occurs which may have an adverse effects on public property, health, safety, or the environment, SCA will notify DOGM by the fastest available means and comply with remedial measures required by DOGM.

515.200 Impoundment Hazards

At any time there is a potential impoundment hazard, SCA will notify DOGM by the best available means. DOGM will be informed of the emergency procedures formulated for public protection and remediation.

515.300 thru 315.322 Procedures for Temporary Cessation of Operations

Before temporary cessation of excavation of the refuse pile or reclamation activities for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, SCA will submit to DOGM a notice of intention to cease or abandon operations. It is understood by SCA that temporary abandonment will not relieve a person of their obligation to comply with any provisions of the approved permit. Regular monitoring and inspections will continue. Maintenance will occur if needed.

All surface facilities will be effectively secured in areas in which there are no current operations, but in which operations are to be resumed under an approved permit.

In the event of a cessation, regulations 515.321 and 515.322 will be addressed. A statement of the exact number of surface acres and the horizontal and vertical extent of subsurface strata which have been affected in the SCA Permit Area prior to such temporary cessation or abandonment, the extent and kind of reclamation of surface area which will have been accomplished, and identification of the backfilling, regrading, revegetation, environmental monitoring, and water treatment activities that will continue during the temporary cessation.

516 SLIDE PREVENTION

There are no underground mining operations within the SCA Permit Area, nor are there any exposed coal seams. Therefore, barriers for the purpose of slide prevention near coal seams will not be used within the SCA Permit Area.

520 OPERATION PLAN

521 GENERAL

The following sections contain plans, appropriate maps, cross sections, narratives, descriptions, and calculations in accordance with the requirements relevant to this section. Practices will be limited to excavation and handling of coal mine waste to segregate non-combustibles, and redisposing such materials in accordance with 301-536. SCA's operating plan for its adjacent alternative energy power plant is designed to substantially reduce the final quantity of waste materials which will ultimately remain within the existing refuse disposal area. Reclamation essentially commenced with the first ton of waste removed and used as an alternative energy fuel. Reclamation will be a continuous process over the life of the mine, ultimately grading, covering and revegetating any remaining non-combustible materials. Descriptions of these operations are included in the following sections as well as Chapter Nine, Mining Plan.

521.100 thru 521.190 Cross Sections and Maps

See Section 512 for a list of plates that are pertinent to fulfilling the requirements of this section.

521.200 thru 521.270 Signs and Markers Specifications

The location and details for Permit boundary, historic sites, disturbed area and topsoil stockpiles are shown in Plate 3-1, Pre- and Post Law Disturbance. All required signs and markers are in place and maintained in

compliance with R645-301-521.200.

1. The signs and markers will be posted, maintained, and removed by SCA;
2. They will be a uniform design (so that they can be easily seen), be made of a durable material, and conform to local laws and regulations;

3. They will be in-place and maintained during all operation and reclamation activities; and

4. They will be retained and maintained until after the release of all bonds.

For the purposes of the operation and reclamation activities, perimeter markers will be used in compliance with the following rules and regulations:

1. The perimeter of all areas affected by surface operations or facilities before beginning reclamation activities will be clearly marked; and

2. The perimeter of the SCA Permit Area will be clearly marked before the beginning of surface reclamation activities.

For the purposes of the operation and reclamation activities, buffer zone markers will be used in compliance with the following rules and regulations:

1. Signs will be erected to mark buffer zones as required under R645-301-731.600 and will be clearly marked to prevent disturbance by surface operations and facilities; and

2. Buffer zones will be marked along their boundaries as required under R645-301-731.600.

Topsoil markers have been erected to mark where topsoil or other vegetation-supporting material is physically segregated and stockpiled as required under R645-301-234.

522 COAL RECOVERY

SCA's activities will maximize the use and conservation of the coal resource by gleaning the very least amount of heating value originally extracted from the coal measures. SCA will utilize the best technology currently available to incinerate coal mine waste in a fluidized bed combustion boiler, which will supply steam to generate over 50 MW of electrical energy. Fluidized-bed combustion has been approved as the best technology to maintain environmental integrity during this waste utilization activity.

Abandoned coal refuse piles are often times reactivated, and reprocessed to recover a marketable coal product. On some occasions, piles are reworked several times, using various processing approaches. SCA's activities will assure that no reworking of this pile occurs in the future, as the small amount of remaining materials will have been determined to be non-combustible. SCA's use of coal mine waste to generate electricity is consistent with our national energy policy to conserve our domestic energy resources.

523 MINING METHODS

SCA's activities will include excavation and handling of coal mine waste and redisposal of non-

combustible materials within the SCA Permit Area. Approximately 410,000 tons per year of coal mine waste will be consumed by SCA. The fueling plan for the coal waste fired generator will require excavation of accumulated waste from the existing pile areas, beginning as early as January 1993, and continuing for approximately thirty years. Based on SCA's contract for the sale of electricity to Utah Power and Light, handling coal mine waste to serve as an alternative energy fuel will be a consistent and continuous process. Coal mine waste that continues to be generated by offsite preparation plants will also be factored into SCA's fueling strategy, which can allow direct acceptance of waste at the facility, or temporary placement within the refuse disposal area prior to utilization.

Detailed plans on excavation activities can be found in Chapter Nine, Section 9.6.

SCA will use a standard mobile fleet of excavation equipment which may include all or some of the following: dozers, front-end loaders, end-dump trucks, scrapers, back-hoes, and support equipment (water truck, maintenance vehicles). Excavation will be carried out in lifts, to assure continued stability of the refuse pile, while providing ability to segregate non-combustible materials as they are encountered. An advancing benched face working area will provide access to fuel along a face on each working layer. Sampling and testing will be a continuous process to insure that materials provided to SCA's cogeneration facility meet minimum levels of combustibility. Materials will be segregated as they are excavated for handling in one of three ways: 1) direct hauling to the power plant site, 2) redisposal within the SCA noncombustible waste site, or 3) handled through a static grizzly on the refuse pile to separate non-combustibles (rocks, metal, timbers, etc.). Any materials separated through the grizzly will be temporarily stored in piles until loaded and transported to the combustor or the refuse disposal area. The grizzly staging area will be relocated from time to time as excavation activities warrant, and will minimize accumulations of separated materials.

523.100 thru 523.220 Surface Coal Mining and Reclamation Operations Relating to Underground Mines

No activities related to the SCA Permit Area will be conducted closer than 500 feet of an underground or abandoned underground mine. This is reinforced by the fact that there are no underground or abandoned underground mines within 500 feet of the SCA Permit Area boundary.

524 BLASTING AND EXPLOSIVES

There will be no blasting or explosives used within the SCA Permit Area. Thus, regulations 524 through 524.800 are not applicable to this Permit Application and consequently are not addressed.

525 SUBSIDENCE

No material damage or diminution within the Permit Area will be caused by subsidence because no underground coal resources are available within the Permit Area which would cause subsidence. No past or future underground coal mining operations have or are likely to occur within the SCA Permit Area.

526 MINE FACILITIES

The following sections contain narratives explaining the construction, modification, use and maintenance of facilities that lie within the SCA Permit Area and are designated in sections 526.100 through 526.300.

526.100 thru 526.116 Mine Structures and Facilities

Surface and subsurface facilities and features which existed prior to January 21, 1981 are shown on Plate 5-8 existing surface and subsurface facilities and features. Existing surface features are identified on Plate 5-1 Surface Facilities.

SLURRY HANDLING and STORAGE

The **slurry ditch** was constructed in the 1950's, for the purpose of transporting coal processing waste in slurry form from the Sunnyside Mine wash plant to the disposal sites within the current SCA permit area. Surface drainage from the hillside north and east of the SCA permit area as well as the area between the railroad tracks was collected by the coal slurry ditch and could be routed with the coal fines through either Slurry Pond 1 or Slurry Pond 2 and then into the Clear Water Pond (see Plate 7-1).

Typically, during operation of the Sunnyside coal wash plant, one slurry pond was in use while the other was in either the drying or cleaning stages. Occasionally when both slurry ponds were being serviced, flows were diverted to the East Slurry Cell. With the cessation of operations at the SCC Wash Plant, slurry is no longer being transported to the SCA Permit Area. The purpose and use of the slurry ditch is now for collection and conveyance of surface runoff. The Excess Spoil Disposal Area #2 has been proposed to fill the area of the slurry ponds and clear water pond. This proposal includes additional maintenance to the slurry ditch (see Appendix 9-7). The ditch meets or exceeds the permanent program performance standards. It is of sufficient size to safely pass the design storm as calculated in Appendix 7-3.

The **West Slurry Cell** (formerly MSHA No. 1211-UT-09-02093-03) was located near the center of the permit area. The cell was constructed in the 1950's as a disposal site for fine coal refuse slurry. Wet slurry was last deposited in this cell in 1975 when the East Slurry Cell was put in operation. Since then, dry coal fines from other slurry cells as well as coarse refuse from the Sunnyside Mine have been placed in the cell. This area was actively mined by SCA during the first years of operations.
A dike was constructed of non-combustible earth materials across the existing wash to impound the slurry. This dike was subsequently covered with coarse refuse material to stabilize the west bank of the slurry cell in order to meet the permanent program performance standards under SMCRA. This dike material was excavated during the SCA operations. The West Slurry Cell has been excavated to the point where it no longer is considered an impoundment and has been decommissioned by MSHA. The area is now only referred to as the Refuse Pile.

The **East Slurry Cell** is located adjacent to and on the east side of the former West Slurry Cell. The cell was constructed in 1974 primarily of coarse refuse material. The pond was constructed with a total capacity of 184 acre-feet. The East Slurry Cell is a temporary control structure with MSHA No. 1211-UT-09-02093-02. The structure is a temporary impoundment as addressed in R645-301-733. The structure is addressed by the MSHA criteria of 30 CFR 77.216(a). Storm runoff captured by the impoundment is allowed to evaporate or infiltrate. The SCA operations attempt to minimize the surface area from which precipitation runoff is allowed to flow into the East Slurry Cell.

The outer slopes of the east bank of the East Slurry Cell were reclaimed by the Sunnyside Coal Mine. SCA intends to excavate the suitable coarse refuse and the fine refuse from the cell in accordance with the mining plan outlined in Chapter Nine. Regular monitoring is conducted in accordance with the regulations for this structure. These monitoring reports are available at the mine site. See Appendix 7-3 for hydrologic calculations. This cell meets or exceeds the permanent program performance standards.

Slurry Ponds #1 and #2 were located near the northeast corner of the permit area. They were constructed during the 1970's to de-water the slurry from the Sunnyside coal wash plant. Fine refuse slurry material arrived from the coal preparation wash plant by way of the open slurry ditch. The ponds were designed to be used for de-watering, settling and filtration of the coal fines.

During typical, operations of the Sunnyside Coal Company's coal wash plant, one slurry pond was in use while the other was in either the drying or cleaning stages. Occasionally when both slurry ponds were being serviced, flows could be diverted to the East Slurry Cell and runoff did not go into the Clear Water Pond. Routine flow of the coal fines was manually controlled by the Sunnyside Coal Mine. The coal fines and sediment were allowed to fill to a maximum level that allows sufficient remaining volume in the pond to contain the design storm runoff.

The ponds were partitioned with a filter dike. The filter dike for Slurry Pond 2 was retro-fitted in 1993 with a filtering fabric to reduce the migration of coal fines into the Clear Water Pond. The water filtered through to an eight inch outlet pipe that routed it to the Clear Water Pond for further settling. The eight-inch pipe was the only outlet from the Slurry Ponds. The Slurry Ponds were primary sediment structures with the Clear Water Pond providing final treatment prior to discharge to the Icelander drainage. At no time did the slurry ponds discharge directly to the Icelander Drainage.

These two slurry ponds were temporary impoundments as addressed in R645-301-733. They were not addressed by the MSHA criteria of 30 CFR 77.216(a). They met the single channel spillway exemption of R645-301-743-132 by meeting the requirements of R645-301-742.225.2. **Slurry Pond #1** had a total record volume of 16.4 acre-feet (top of bank). **Slurry Pond #2** had a total record volume of 15.3 acre-feet (top of bank).

Regular monitoring is conducted in accordance with the regulations for these structures. These monitoring reports are available at the mine site. See Appendix 7-3 for hydrologic calculations. These ponds meet or exceed the permanent program performance standards.

The Excess Spoil Disposal Area #2 has filled the area of the slurry ponds and is approved to fill the Clearwater Pond (See Appendix 9-7).

The **Clear Water Sediment Pond** (UPDES 004), constructed during the 1970's and located near the northeast corner of the permit area, is an off channel, temporary sediment control structure, with a total record volume of 4.86 acre-feet (top of bank). The structure is a temporary pond as addressed in R645-301-732.200. The structure does not meet the size or other qualifying criteria of the MSHA of 30 CFR 77.216(a). Therefore, it provides a combination of principal and emergency spillways that will safely discharge a 25 year, 6 hour event.

The primary discharge is through a perforated eight-inch stand pipe. An emergency open channel spillway at elevation 6530.08 can safely discharge the 25 year 6 hour storm. Two open channel inlets (riprap lined) enter the pond. Most storm runoff from the watershed has been routed to the East Slurry Cell and the main peak flows were not realized in the Clear Water Pond (see Plate 7-4).

The Excess Spoil Disposal Area #2 has been proposed to fill the Clearwater Pond (See Appendix 9-7).

Additional information concerning impoundments and slurry cells is available in Appendix 7-3. Other impoundments within the SCA permit site are also discussed in Section 526.300 Water Pollution Control Facilities as well as in Chapter 7 and Appendix 7-3. Regular monitoring of all impoundments is conducted in accordance with R645-514. These monitoring reports are available at the mine site and are submitted to the Division as required. All impoundments meet or exceed the permanent program performance standards.

COARSE REFUSE HANDLING and STORAGE

Construction of the **REFUSE PILE (MSHA ID Number 1211-UT-09-02093-01)**, which SCA is excavating, began prior to 1969. The western toe of the pile was extended to the west in the 1970's to provide a stable embankment for the West Slurry Cell that existed at the time and meet the permanent program performance standards. Additional refuse material was added to the top surface of the refuse pile by the Sunnyside Coal Mine as recently as 1994.

Plates 9-4 identify the location and extent of the coarse and fine refuse that has been deposited by the Sunnyside Coal Mine over the past decades and outlines the intended mining sequencing as SCA excavates the refuse usable as fuel for the adjacent power plant. The information used to create these mine sequencing plates comes from a study conducted by John T. Boyd Inc. and has been included in Appendix 9-1 of the permit as a reference.

Temporary storage areas are identified on Plate 9-2. These areas were approved by DOGM in 1993. They are adequately graded to provide surface drainage towards an approved diversion which flows to an approved sediment pond. These areas meet or exceed the permanent program performance standards.

Refuse Haul Roads are appropriately identified and classified on plates 5-2. They are graded and maintained to meet or exceed the permanent program performance standards. Transportation facilities are further discussed in Section 527. The south portion of the Old Coarse Refuse Haul Road, constructed by Sunnyside Mine in the 1970's, was reclaimed by SCA in 1994 (see Plates 10-2).

The **Crushing and Conveyance Structures** located at the north end of the permit area were constructed in 1992. The permit boundary was increased in 1994 to include these facilities. Plate 5-1 identifies the structures within the permit area as well as the adjacent cogeneration facility. A narrative description of the facilities is in Chapter Five. These facilities are maintained and operated to comply with the appropriate MSHA requirements and to meet or exceed the permanent program performance standards.

The **Excess Spoil Disposal Area** #1 (MSHA # 1211-UT-09-02093-04) is currently under construction and will continue to be constructed throughout the life of the cogeneration facility. This area west of the Refuse Pile was identified in 1993, for permanent disposal of excess spoil and coal mine waste. The permanent disposal area will be constructed and maintained to meet the permanent program performance standards. Regular inspections will be conducted in accordance with R645-301-514.

Foundation studies conducted have determined that the area is appropriate for this permanent disposal facility within the constraints of its design. Surface water is diverted around the disposal area. This site is not a slurry cell and large quantities of wet waste are not disposed of in the pile. No existing seeps or water sources were identified, therefore, concerns about acid leachate were determined negligible. Under-drains were determined to be unnecessary. See Plates 9-1, Chapter nine, and Appendices 9-2, and 9-5 for design criteria.

The Excess Spoil Disposal Area #2 has been proposed for construction in the northeast portion of the Permit Area. In essence, this small disposal area is designed to fill the two former slurry ponds and the Clearwater Pond with excess spoil and coal mine waste.

This permanent disposal area is proposed to be constructed and maintained to meet the permanent program performance standards. Regular inspections will be conducted in accordance with R645-301-514. See Plates 9-8, Chapter Nine and Appendix 9-7 for design criteria.

The temporary storage area west of the Pasture pond for **Non-Coal Waste** was identified in 1993. This area will be used as described in Chapter Nine for the temporary storage of non-coal waste until such time as the material can be disposed in an appropriate local landfill. The storage area will be maintained in accordance with the permanent program performance standards. The **Industrial Waste Dump**, utilized by the Sunnyside Mine since the 1970's, was closed and capped with 18 inches of clay material as described in Chapter nine. This former dump site is now used by SCA as Temporary Storage Area #2.

Topsoil was removed prior to all new surface disturbance and construction which commenced following enactment of laws requiring its protection. The topsoil is stored in stockpiles on the permit site. After the useful life of these area from which the topsoil was removed, the topsoil will be used to reclaim the area in accordance with the reclamation plan. All topsoil piles on the SCA permit area are appropriately identified and protected. They have been revegetated for interim soil protection, and adequate berms are in place to contain eroded sediment from the piles as calculated in Appendix 7-7. They meet the permanent program performance standards. See plates 5-5 for cross-sections and volumes of the stockpiles.

The **Revegetation Test Plots** (Sacco Flats Test Plots), located in the north-east portion of the permit site, were constructed by the Sunnyside Mine in the Fall of 1985. The SCA permit boundary was enlarged in 1993 to include the entire plots. These test plots are maintained to meet the permanent program performance standards. Annual maintenance includes items such as fence repair and other items identified as necessary.

526.200 thru 526.222 Utility Installation and Support Facilities

The only utilities within the SCA Permit Area are power lines which are shown in Plate 5-1. These power lines are maintained by Utah Power and Light. All operations will be conducted in a manner which minimizes damage, destruction, or disruption of services provided by these UP&L electric lines.

Support facilities, of which there are currently none on-site, will be operated in accordance with a permit issued to SCA for the refuse disposal area. Plans and drawings for each support facility to be constructed, used, or maintained within the SCA Permit Area include a map, appropriate cross sections, design drawings, and specifications sufficient to demonstrate how each facility will comply with applicable performance standards. In addition to the other provisions of R645-301, support facilities will be located, maintained, and used in a manner that:

1. Prevents or controls erosion and siltation, water pollution, and damage to public or private property; and

2. To the extent possible using the best technology currently available - minimizes damage to fish, wildlife, and related environmental values; and minimizes additional contributions of suspended solids to stream flow or runoff outside the SCA Permit Area.

526.300 Water Pollution Control Facilities

The water pollution control facilities within the SCA Permit Area include sediment ponds and diversion ditches.

Sedimentation control ponds are used to store and/or treat water runoff from disturbed areas up to and including a 10-year, 24-hour event. Designs of the ponds and diversions are located in Appendix 7-3. Details (including design drawings and calculations) for all sediment control ponds and diversion ditches are included in Chapter Seven, Section 720.

All sediment ponds will be inspected as outlined for impoundments in Section 514.

Sediment removed from the ponds will be disposed of in the excess spoil area. If the material is to be used as a borrow material, the material will first be sampled and tested to verify its quality. Material to be reused as topsoil substitute must meet acceptable classifications according to the Table Two from the DOGM Guidelines for Management of Topsoil and Overburden and must comply with the Title V Coal Program Guideline for Disposal of Sedimentation Pond Waste, dated November 26, 1990. The operator will contact DOGM to receive approval of the location and the amount of material to be used. All impoundments meet or exceed the permanent program performance standards.

526.400 Air Pollution Control Facilities

SCA will continue its programs in the permit area to comply with the requirements of the Clean Air Act and other applicable air quality laws and regulations, as well as health and safety standards. A copy of the SCA Air Quality permit is included in Appendix 4-2.

Most of the region around the SCA Permit Area has been designated a Class II area for purposes of determining any significant amounts of air quality deterioration. Deterioration of the air quality is not expected during the permit period with the exception of short high wind periods when sand and smaller grained particles are picked up outside of the SCA Permit Area and added to the air in the permit area.

The haul roads used by the refuse trucks are unpaved. To control fugitive dust, roads around the main complex which are being used by mobile equipment will be treated with calcium chloride, potassium chloride, or other acceptable biodegradable, organic wetting agents or sprayed with water as required during dry periods as required by SCA's Air Quality Permit.

NON-MINING RELATED ACTIVITIES

To comply with a requirement from the Utah Division of Air Quality, a small meteorological station was installed on the south ridge near the Excess Spoil Disposal Area (See Plate 5-1). The weather station was installed during the Summer of 1994 in connection with the non-mining related activities of the adjacent cogeneration facility. At the completion of the air monitoring study, this station maybe removed without prior approval of DOGM.

Terra-Tek, a drilling company, has been testing drill bits periodically since 1975 in an area in the western portion of the current SCA Permit Area. They generally drill to a maximum depth of about four feet. The

area where drilling typically occurs is identified on Plate 5-1. Sunnyside Coal Company allowed Terra-Tek to conduct these non-mining related activities while the area was part of their permit. SCA will likely allow the drilling to continue until such time as it conflicts with the SCA operations. The Division was notified by letter dated March 17, 1993 of SCA's intentions regarding Terra-Tek.

527 TRANSPORTATION FACILITIES

The roads within the SCA Permit Area are shown on Plate 5-2. Also included on Plate 5-2 is a table showing widths, grades and lengths of each road within the SCA Permit Area. Plates 5-2C through 5-2J, excluding Plate 5-2I, include typical cross-sections for the roads and plan and profiles of each road.

Roads within the SCA Permit Area will be maintained during the permit period. Maintenance will consist of basic custodial care to control erosion, repair of structures and drainage systems, removal of debris from culverts and ditches, and replacement of road surface material as needed. Additionally, all unpaved roads being used by mobile equipment and other unpaved operational areas will be water sprayed and/or chemically treated as necessary to reduce fugitive dust as required by SCA's Air Quality Permit.

In the event of a catastrophic event, roads will be repaired as soon as possible after the damage has occurred. Furthermore, there are no plans to alter any natural drainage way, or make alterations involving a steep cut slope.

All transportation facilities will be properly maintained and then restored at the end of the cogeneration plant life to prevent damage to fish, wildlife, and related environmental values, as well as to prevent additional contributions of suspended solids to stream flow or runoff outside the SCA Permit Area. Appendix 5-7 includes a description of each road and structural stability calculations for the roadway embankments. Additional information on final reclamation of roads can be found in Chapter Ten. All transportation facilities meet or exceed the permanent program performance standards.

WASTE COAL HANDLING SYSTEM DESCRIPTION

The following sections discuss operations involving the use of the crushing facility. The crushing system utilizes the following units:

1. Waste coal receiving hopper (Truck Dump);
2. Transfer conveyors;
3. Crusher System;
4. Product Transfer/Stacking Conveyors/ Screen Stations
5. Silo Storage/Transfer Conveyors; (Not in Permit Area)
6. Live-Storage Silos (Not in Permit Area).

The SCA Permit Area was enlarged to include the crushing units on May 16, 1994. The items 5 and 6 are not within the permit area. These facilities are associated only with the power plant operation and are not part of the mining process. The SCA crushing unit exists solely to appropriately size all material utilized in the SCA plant. This sizing is required regardless of the origination of the fuel. All material, whether it be run of mine ("ROM") coal or waste coal, will be run through the receiving hopper and crushed and sized accordingly.

It is anticipated that the SCA project may need to purchase six to seven thousand tons of ROM coal per year. This coal will typically be utilized when the waste fines have been frozen and are less accessible.

There may be other circumstances when ROM coal will be utilized by the SCA facility.

Plate 5-1 shows the location of the crushing facility in relation to the SCA Permit Site. Material to be burned in the plant is run through the crushing and conveyor system and stored in the silos based on the B.T.U. values, etc. Then, material is fed from the silos through a conveyor system into the power plant and the boiler. The fluidized bed boiler requires material to be crushed to a certain specification. Therefore, it is important the SCA crushing unit size the material correctly.

The waste coal pile owned by SCA represents approximately 23 years of fuel supply on the ground. If the SCC mine were to cease operation today, SCA could be required to transport material to its site, either mixing ROM coal with its current waste coal supply to extend the life of the pile, or purchasing additional waste materials from other sites. All these materials must go through the crushing system that SCA has on site to meet boiler specifications for fuel.

It is important to know that no matter where material is obtained, whether it be from SCA's DOGM permitted area, ROM coal, or waste material from another site, this material is all directly fed into the waste coal receiving hopper and sized and crushed accordingly. SCA is not unique in this process. All coal fired power plants have crushing units on site to prepare fuel for boiler specifications.

The following paragraphs include a detailed description of the waste coal handling system for the SCA cogeneration facility.

The handling system provides for receiving Waste Coal from two independent sources, including screening the material according to size, with the oversize material being crushed to a 1/4" top size, and storage in segregated, enclosed silo systems, (1,800 tons total capacity), according to BTU content, (high or low), for reclamation in a proportioned blend by the plant operating system (provided by others).

The system also provides for: weighing incoming material as it is received, with printed record; removal of metals via electro-magnet, with backup metal detection of the final product; and, the ability to segregate crushed product into an open, dead-storage pile for emergency reclamation, if needed. Dust control features of the system include totally enclosed live-storage silos and transfer points, covered conveyor systems and a water-spray type dust suppression system at transfer points, as needed.

Waste Coal Receiving Hopper

Material from the Waste Coal piles will be received in an 100 ton capacity, ramped, drive-over Waste Coal Receiving Hopper designed with slope angles to ensure the flowability of wet, sticky coal.

The hopper slopes are lined with high molecular weight plastic sheeting ("slick sheet") to enhance flowability as well as to act as a replaceable wear surface. Air cannons are provided in the lower hopper walls to provide for flow activation for the fine pond material. The hopper is open, above grade, on one side to provide a "push-in slot" for receiving coal by dozer when needed.

Dust control is accomplished with a water-type suppression system to "fog" the hopper volume during unloading of dry gob materials.

Transfer Conveyors

Waste coal flows from the Waste Coal Receiving Hopper on a slow-speed, troughing conveyor (200 tph

effective capacity) which feeds a transfer conveyor (250 tph effective capacity) that feeds the Primary Screen. The Receiving Hopper conveyor belt is a heavy duty 3-ply belt to resist bruising and tears at this high impact point of loading.

A self-cleaning electro-magnet is mounted on the transfer conveyor to remove metals. A metal detector is mounted over the transfer conveyor downstream of the magnet as a protection element for the screening/crushing system. Additionally, a belt scale system (+ 1/4% accuracy) weighs all incoming material, with printed record.

Primary Screen and Crusher

The Primary Screen receives material from the transfer conveyor and separates the material into different sizes. Material from the Primary Screen deposits material onto a final product conveyor, or reject conveyor or directly into the crusher.

The Crusher receives material from the Primary Screen and sizes it to a nominal 1/4" size. A dust collection system is provided for the Crusher.

Product Transfer/Stacking Conveyors/Screen Stations

Sized material from the crusher flows onto a 36" Product Transfer conveyor (250 tph effective capacity) to the Secondary Screen. The product is then conveyed either, back to the crusher, to an open-pile for placement in dead storage, or to the Silo Storage Conveyor for transfer to the live-storage silos.

Dust Control for the Product Transfer and Stacking Conveyors and the Secondary Screen is a water-type suppression system.

Silo Storage/Transfer Conveyors

The Silo Storage/Transfer Conveyors are located adjacent to the Permit Area and are associated with the power plant operation. The Silo Storage Conveyor is a stationary, troughing conveyor (250 tph effective capacity

Transfer points on top of each silo are semi-enclosed, with Y-gate chutes on the first two silos to direct the product into the silo, or onto the Silo Transfer Conveyors which connect to adjacent silos. The chute work is lined with slick sheet to enhance flowability.

Live-Storage Silos

The Live-Storage Silos are not located within the Permit Area. They are not associated with the mining operations. The three Live-Storage Silos are steel, totally enclosed cylindrical silos with cone hoppers (23,950 cubic feet total capacity each). Hopper angles are a minimum 60 degrees to ensure free flow of material during reclamation. A manually-operated, positive shut-off gate is included at the hopper outlet to provide for maintenance of adjacent mechanical equipment (to be provided by others).

Other silo features include bin level indicators and air-cannon flow activators. The silos are mounted with the outlets at the appropriate level, near grade, to provide for transfer of material by feeder systems onto the plant feed conveyor (to be provided by others).

528 HANDLING AND DISPOSAL OF COAL MINE WASTE

The applicability of Section 528 is related to handling of excess spoil and coal mine waste only. Details on the excavation of the coal mine waste can be found in Chapter Nine, Sections 9.6 through 9.7.

Excess Spoil Disposal Areas

Excess spoil will be placed in an Excess Spoil Disposal Area, designated on Plates 9-1A, 9-1B, 9-1C, and 9-1D or on Plates 9-8 A-D, in a controlled manner to ensure mass stability and prevent mass movement during and after construction. The disposal site will be designed and constructed to ensure that leachate and drainage from the area is controlled and does not degrade surface or underground water. Wastes will be routinely compacted and covered to prevent combustion and wind-borne waste. When the disposal is completed, a minimum of eighteen inches of soil cover will exist over the site and the site will be revegetated in accordance with the approved reclamation plan.

The Excess Spoil Disposal Areas will be inspected as required in Section 514.

Additional information concerning spoil disposal is outlined in Chapter Nine and Appendices 9-2, 9-5 and 9-7.

Slurry Ponds

Fine refuse from the SCC preparation plant was previously moved to dewatering or disposal areas by slurry transport in an open ditch. There were four slurry ponds within the SCA Permit Area: the West Slurry Cell, the East Slurry Cell, Slurry Pond One, and Slurry Pond Two. The East and West Slurry Cells were settling and evaporating impoundments that were constructed prior to or during 1974. Slurry Ponds One and Two were settling ponds. Presently, the SCC preparation plant is no longer in operation. Slurry Pond One and Slurry Pond Two have been filled in connection with Excess Spoil Area #2. The East Slurry Cell is storing slurry fines and receives surface runoff. The West Slurry Cell was excavated to the point that it no longer is an impoundment.

The West Slurry Cell was the first impoundment to be constructed for the disposal of slurry and coal mine waste in the late fifties to early seventies (Appendix 5-2). Coal mine waste and other waste was used as fill material to block a wash in the pediment material at the mouth of Whitmore Canyon overlooking the Icelander Drainage. Slurry from the preparation plant was transported to the impoundment by ditch for disposal. As the level of the slurry increased, additional coal mine waste was added to the top and sides of the impoundment. The present level of the slurry in the impoundment is over 200 feet above the bottom of the wash.

The East Slurry Cell was constructed in 1974 on the east side of the West Slurry Cell. Coal mine waste was placed and compacted in dikes. After the dikes were completed and covered with soil material, the impoundment was filled with slurry. After 1983, the impoundment was used as an overflow for the former Slurry Ponds One and Two.

Slurry Ponds One and Two were constructed in 1978 to the north of the East and West Slurry Cells. These ponds were constructed by excavating a depression in the colluvium at a gentle slope. Material from the depression was spread out down slope of the ponds for approximately 50 to 100 feet. Slurry Ponds One and Two were used in rotation. Slurry was introduced into a pond where it settled and was then filtered. During the use of the first pond, the second pond was decanted and the dried slurry removed by truck to the West Slurry Cell. After the second pond was cleaned, the cycle was reversed. If both ponds were in

the drying and cleaning cycle, the slurry was diverted to the East Slurry Cell. Water from Slurry Ponds One and Two was discharged into the Clear Water Pond (UPDES Outfall #004) and then discharged to Icelander Drainage. The East is shown on Plate 7-12.

All surface drainage from the areas above the slurry ponds is diverted away from the embankments by diversion ditches designed to carry the peak runoff from 100-year, 6-hour precipitation event (Appendix 7-3). The diversion structures will be maintained to prevent blockage.

Visual inspections by a qualified registered professional engineer or a qualified MSHA impoundment inspector will be conducted according to 30 CFR 77.216-3 and/or R645-301-514.300 to assess the stability of the impoundments and determine the amount of seepage, if any.

Subsidence will not affect the ponds and embankments since the structures do not overlie the coal seam and are located several miles west of the nearest outcrop. Mud flows, rock debris falls or other landslides are not expected to be a problem because the embankments are located at or above the level of the surrounding topography. Possibility of failure downhill of the embankments is limited to a thin layer of colluvial material on bedrock. Failure of this material would not threaten the embankments.

Coarse Refuse

Detailed cross sections and grades for the Coarse Refuse Pile and East Slurry Cell are shown in Plate 5-6. This plan shows the limits of the coarse refuse pile, as well as the slurry cell.

The coarse refuse disposal area is located on and is part of the west embankment of the former West Slurry Cell. The West Slurry Cell was constructed in the late 1950's to impound coal slurry from the Sunnyside mine's preparation plant. Coarse refuse material was added to the top and sides of the impoundment as the slurry level increased. The West Slurry Cell ceased being used as a settling pond in 1975 when the East Slurry Cell was built. Since that time, SCC continued to use the west embankment of the West Slurry Cell as the coarse refuse disposal area to stabilize the embankment and ultimately allow continued use of the West Slurry Cell.

The existing coarse refuse pile was built in lifts by leveling end dumped piles of material. The coarse refuse pile maintains a maximum 27 degree (2 horizontal:1 vertical) outslope and is terraced on 50-foot vertical increments. The terrace is a minimum 20-foot wide and is gently sloped to control surface water runoff and control erosion.

Geotechnical investigation of the West Slurry Cell embankments were conducted in 1984 and again in 1986. The 1984 work (Appendix 5-3) indicated that the West Slurry Cell embankment above the active coarse refuse disposal area was not stable with a static safety factor of 1.03. The study concluded that a safety factor of 1.46 would be obtained by maintaining maximum slopes of 2 (h) : 1 (v) and maintaining a moist compacted material density of 100 lbs per cubic foot. SCC continued stabilization of the west embankment by wheel compacting coarse refuse in lifts, maintaining 50-foot high benches at a maximum 2 (h) : 1 (v) slope, and establishing a minimum 20-foot terrace at every bench.

A 1986 report (Appendix 5-5) developed for a proposed coarse refuse pile expansion to the north of the existing coarse refuse pile, concluded a 2 (h) : 1 (v) slope between 50-foot high benches and terraces of 30-feet in width, while maintaining a moist compacted material density of 100 lbs per cubic foot provides an adequate factor of safety (greater than 1.5) under static conditions.

Cross-sections C-C', D-D', and E-E' (shown in Plate 5-6) indicate the coarse refuse pile embankment

maintained the slope and bench criteria established in the geotechnical investigations. Recent in-place density testing (Appendix 5-6) indicated moist compacted densities greater than 100 lbs per cubic foot as established in the geotechnical investigations.

The coarse refuse pile will be in a state of ongoing excavation throughout the permit period. A side view of the coal mine waste excavation is shown in Figure 5-1. Excess spoil material and coal mine waste not suitable as fuel will be separated from the combustible material going to the Cogeneration Plant; transported and placed in a controlled manner in horizontal lifts not exceeding four feet in thickness; concurrently compacted as necessary to ensure mass stability and to prevent mass movement during and after construction; graded so that surface and subsurface drainage is compatible with the natural surroundings; and covered with topsoil or substitute material if required. The Excess Spoil Disposal Areas shown in Plates 9-1A, 9-1B, 9-1C, 9-1D, and 9-8 A-D..

All surface drainage from the area above the refuse pile will be diverted away from the fill into stabilized diversion channels designed to pass safely the runoff from a 100-year, 6-hour precipitation event. Calculations are found in Appendix 7-3.

The refuse pile will be inspected as outlined in Section 514.

Maintenance of the embankments will consist of filling and grading any erosion or other failure features discovered by the above inspections. Ditches on the terraces will be cleaned and graded as need warrants. Riprap in the drainage system will be repaired as needed.

Subsidence will not affect the refuse pile as the structure does not overlie the coal seam and is several miles west of the nearest outcrop. Mud flows, rock debris falls, or other landslides are not expected to be a problem. Possibility of failure near the sides and downhill of the refuse piles is limited to a thin layer of colluvial material on bedrock. Failure of this material would not threaten the refuse pile.

Burning and Burned Waste Utilization

Coal mine waste fires will be extinguished by covering the burning material with non-combustible material or by excavating burning or burned waste for surface extinguishing. Clean spoil available in the Excess Spoil Area or approved soil materials imported from off site may be used for fire suppression needs. Most areas of the refuse pile which are not within the active mining area have already been covered with non-combustible material to minimize the potential for coal mine waste fires. Therefore, it is not anticipated that significant quantities of materials will be needed for future fire suppression needs.

Only those persons authorized by the operator, and who have an understanding of the procedures to be used, will be involved in the extinguishing operations. No burning or burned coal mine waste will be removed from the permit disposal area without a removal plan approved by the Division. Consideration will be given to potential hazards to persons working or living in the vicinity of the structure.

Burned coal waste material encountered during excavation of the Coarse Refuse Pile will be disposed of in the Excess Spoil Pile.

Industrial waste

An industrial waste dump was located at the northeast end of the East Slurry Cell and the Refuse Pile in the refuse disposal area. The dump was constructed and used by excavating a trench, compacting the sides and bottom for a water barrier, and then covering the waste with a minimum of two feet of borrow

material. It was closed as outlined in Chapter Nine.

529 MANAGEMENT OF MINE OPENINGS

529.100 thru 529.400 Mine Openings

There are presently no mine openings within the SCA Permit Area, nor are there expected to be in the future. Thus, the discussion of sealing or management of mine openings is not applicable and is not discussed in further detail.

530 OPERATIONAL DESIGN CRITERIA AND PLANS

531 GENERAL

The following sections include general plans for each sediment pond, water impoundment, coal processing waste bank, dam, and embankment within the SCA Permit Area. The SCA Permit Area is not threatened by subsidence of subsurface strata, therefore, the plans will not include discussions of this nature.

532 SEDIMENT CONTROL

The hydrologic design calculations for the sediment ponds are included in Appendix 7-3. These calculations outline the criteria, assumptions, and parameters used in order to design a structure that would be adequate to control sedimentation. Details are discussed in Chapter Seven, Hydrology, Section 740.

There is a system of collector ditches throughout the SCA Permit Area to collect runoff from roads and disturbed areas. These flow into sediment ponds that are located throughout the permit area. These ponds outfall into Icelander Creek tributaries, if they fill to their decant drains. The discharges are subject to the UPDES permit limitations discussed in Chapter Seven, Hydrology.

The permitted operations in the SCA Permit Area include excavations of the refuse piles, crushing the refuse and transportation of the refuse to the neighboring power plant site. The probable hydrologic impacts are expected to change very little with the inclusion of the excavation activities. The disturbance of the refuse piles caused by the excavation may increase sediment yield from these areas. The control of the extra sediment is discussed in Chapter Seven, Hydrology, Section 730.

533 IMPOUNDMENTS

See Sections 514 and 528.

534 ROADS

534.100 thru 534.340 Road Requirements

A maintenance plan for all unpaved roads is outlined below and is in accordance with requirements of both DOGM and the Division of Environmental Health. In the event that existing roads are retained under an approved post-mining land use, maintenance will continue as outlined in this section and section 527. The only post-mining land use plans for some existing roads within the SCA Permit Area are to allow occasional access to existing easements through the Permit area. These roads are identified on the Reclamation Plans.

All unpaved roads and other unpaved operational areas which are used by mobile equipment will be water sprayed and/or chemically treated to reduce fugitive dust as required by SCA's Air Quality Permit. A copy of SCA's Air Quality Permit is located in Appendix 4-2.

535 SPOIL

The disposal of spoil material is outlined in Chapter Nine.

536 COAL MINE WASTE

536.100 thru 536.900 Coal Mine Waste Disposal

See Section 528 and Chapter Nine, Sections 9.6 and 9.7.

540 RECLAMATION PLAN

541 GENERAL

See Chapter Nine, Mining Plan for details on contemporaneous reclamation. Chapter Ten, Reclamation Plan includes details on final reclamation. Reclamation cost estimates are detailed in Chapter Eight, Bonding.

542.400 Abandonment

Before abandonment of the SCA Permit Area or before seeking final bond release, SCA will ensure that all temporary structures were removed or reclaimed and that permanent structures have been maintained properly and meet the requirements of the reclamation plan.

542.500 Sediment Ponds and Ditches

All sediment ponds, mine water discharge ponds, and ditches no longer needed when the reclamation of

the disturbed areas is completed will be re-contoured and revegetated.

542.600 Roads, Culverts, and Bridges

All roads not needed to provide access to the easements crossing the Permit Area, and associated structures will be reclaimed. The culverts will be dug up, removed, and disposed in an approved landfill or otherwise abandoned by filling the culvert to reduce the potential of piping. The roads and their ditches will be ripped, contoured and revegetated.

542.700 Final Abandonment of Disposal Area

Following the excavation of the coal mine waste the remaining material will be regraded to approximately re-establish the surface contours that existed before mining operation disturbances. Revegetation efforts will be initiated following the excavation and regrading activities. See Chapter Nine, Mining Plan for details on contemporaneous reclamation. Chapter Ten, Reclamation Plan includes details on final reclamation.

550 RECLAMATION DESIGN CRITERIA AND PLANS

Approximately 75 percent of the disturbed portions of the SCA Permit site was originally disturbed prior to the current reclamation laws. Plate 5-7 identifies the previously-mined areas.

See Chapter Nine for contemporaneous reclamation details. See Chapter Ten for final reclamation details.

560 PERFORMANCE STANDARDS

Coal mining operations will be conducted in accordance with this permit as approved and with the performance standards of the permanent program.

Primary Roads

- Graded to a minimum side slope of 2%.
- Minimum six-inch cut ditch to collect drainage.
- Dust control techniques actively applied on roads being used by mobile equipment as needed to meet the requirements of the approved Air Quality Permit issued by UDEQ.

Ancillary Roads

- Graded and maintained to adequately serve the purpose of providing access as needed.

Sediment Ponds

- Operated and maintained to protect against any discharge which exceeds the limits set by the approved UPDES Permit issued by UDEQ.
- Periodically monitored, and sampled if needed, as required by the UPDES Permit.
- Sediment level will not reach an elevation higher then the inlet to the decant drain pipe.
- Sized adequate to contain and/or treat the 10-year, 24-hour precipitation event.
- Side slopes not steeper than 2H:1V.
- Spillway adequately clean and clear from sediments or debris to allow safe discharge of the 25-year, 6-hour precipitation event.

Topsoil Storage

- Adequate berm maintained to contain and/or treat runoff from the 10-year, 24-hour precipitation event.
- Cross-sectional storage area between the berm and the stockpile not less than the minimum required in Appendix 7-7.
- Rills and/or gullies deeper than 9-inches will be filled, graded, or otherwise stabilized.

Siltation Fences

- Filter fabric embedded into the ground at least 6-inches.
- Fence post embedded adequately to provide stability.
- Fencing material adequately attached to the filter fabric and to the fence posts to provide support to the fabric.

Straw Bales for Sediment Control

- Adequately installed and maintained to direct runoff through the bale rather than allowing flows around or under the bale.

- Deteriorated bales shall be replaced or supplemented with an additional bale if the area being treated still requires additional sediment control.

Diversions/Culverts

- Side slopes no steeper than 2H:1V.
- Of adequate cross-section to safely pass the design storm without overtopping the banks or floodplain.
- If extensive erosion or siltation occurs which inhibits the diversion or culvert from passing the design storm or which contributes excessive sediment to the receiving storm, maintenance will be provided. This maintenance may include excavating or shaping the diversion to line, grade and cross-section to meet the design criteria specified in Chapter 7.